DOCUMENT RESUME

ED 423 134 SE 061 755

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TITLE	A Head Start on Science: Improving the Capacity of Families and Teachers To Promote and Enhance the Lives of Children. Spotlight on Student Success, No. 204.
INSTITUTION	Mid-Atlantic Lab. for Student Success, Philadelphia, PA.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	1998-00-00
NOTE	3p.
AVAILABLE FROM	Mid-Atlantic Regional Educational Laboratory, Laboratory for Student Success, 1301 Cecil B. Moore Avenue, Philadelphia, PA 19122-6091.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Concept Formation; Hands on Science; *Inquiry; Knowledge Base for Teaching; Preschool Education; Professional Development; Science Activities; *Science Curriculum; Science Education; Science Programs; *Scientific Literacy; Scientific Methodology
IDENTIFIERS	Project Head Start

ABSTRACT

This digest provides an overview of the Head Start on Science (HSS) program which is designed to encourage the science literacy of preschool children in Head Start programs and to improve the capacity of Head Start teachers, assistants, and parents. The overall goal of the HSS program is threefold: (1) to broaden HSS participants' science knowledge and conceptions; (2) to enhance participants' ability to use scientific inquiry; and (3) to integrate the HSS program into the core curriculum. In addition to an overview of the program, the program research base is summarized, program components are described, findings of the project are highlighted, and implications of the project are discussed. (Author/DDR)

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Spotlight on Student Success

A digest of research from the Laboratory for Student Success No. 204

A Head Start on Science:
Improving the Capacity of Families and Teachers to Promote and Enhance the Lives of Children

by
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OVERVIEW

The Head Start on Science (HSS) program is a five-year program developed by the Laboratory for Student Success (LSS) to encourage science literacy of preschool children in Head Start programs and to improve the capacity of Head Start teachers, assistants, and parents. The overall goal of the HSS program is threefold: (a) to broaden HSS participants' science knowledge and conceptions; (b) to enhance participants' ability to use a scientific inquiry; (c) to integrate the HSS program with the core curriculum.

The HSS program is designed to serve as a field-based, staff-centered, professional delivery system that meets the support needs required by Head Start staff to broaden expertise in implementing science literacy and to redesign preschool learning environments into science-rich and student-centered settings. Through an intensive two-week summer institute and a follow-up technical assistance support program, the HSS program implements an integrated approach to developing science literacy and communication skills to further the learning of preschool children. Teaching scientific process skills improves the ability of participants to foster a fundamental set of "learning to learn" skills. This approach not only develops their ability for using process skills in self-directed learning, but also enhances their ability to engage in learning processes that require problem-solving.

PROGRAM RESEARCH BASE

Increasingly, educators have come to view children as active constructors of their own learning, rather than passive recipients of knowledge. According to this view, learning is an interpretive process in which learners actively construct their own understanding of the world by building on their previous experience and knowledge and then communicating their understanding and their ideas.

Thus, achieving a world-class standard of science literacy among this nation's next generation of children and youth requires major rethinking in curriculum reform. For too long, our education system has viewed the technique of learning science as a process of rote learning and textbook dependent activities. Science learning can and should focus on stimulating, real-world problems that provoke and nurture children's natural curiosity, insight, and ability to learn. Today, there is an increasing call among science educators for fundamental changes in course content and modes of instruction to increase students' preparedness in science. This call has served as the basis for the HSS science content.

PROGRAM COMPONENTS

Implementation of the HSS program began in 1996 with a two-week summer institute that was conducted for 17 teams of teachers, assistants, and parents from Head Start programs in Pennsylvania and New Jersey. The aim of the summer institute was twofold: (a) to provide professional development for teachers, assistants, and parents of low-income preschool children through a science-rich, student-centered environment that emphasizes the development of appropriate skills and attitudes in using an inquiry approach to science literacy; and (b) to prepare participants to create a lifelong interest in science for themselves and the students. The institute incorporated Head Start science curriculum materials developed by the HSS program directors to assist teachers and parents to heighten and

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nurture children's and families' willingness to learn. Overall, the summer institute encouraged participants to become more capable, comfortable, confident and enthusiastic about increasing their own and the children's "natural curiosity" about the world.

Follow-up support was provided to the institute participants during Year 2 of the project during the 1996-1997 academic year. HSS staff provided research-based information relevant to each Head Start program on what works, as well as on-site visitation and consultation on needs assessment and identification of implementation barriers. In addition, HSS project staff developed site-specific technical assistance plans based on the analysis of needs by site personnel and implementation progress.

Replication of the HSS program will occur during Years 3 to 5 of the project in sites throughout the mid-Atlantic region. Future replication teams will be invited to visit the first cohort of Head Start on Science implementation sites and meet with the collaborating cultural and educational institutions to gain first-hand insight into the program.

HIGHLIGHTS OF FINDINGS

Overall, the HSS program seeks to improve the capacity of families and teachers to promote and enhance the lives of young children in three specific ways: (a) ensuring that all children start school ready to learn; (b) enhancing teachers' ability to foster the science literacy of children and parents; and (c) promoting partnerships to increase parental involvement and participation.

Findings from an ethnographic interview focusing on the teaching and learning of science and follow-up site visits to Head Start programs show that the Head Start teachers, assistants, and parents have increased their ability to create and manage school learning environments that provide preschool learners with an opportunity to test their own ideas, engage in cooperative learning and exploration, learn from the ideas of their peers, and generalize from one context to another. Head Start teams have also transferred the science inquiry approach to learning both at home and in other educational environments, such as museums, zoos, aquariums, libraries, and other cultural and educational resources.

Follow-up visits to the first cohort of participating sites showed that HSS participants have increased their interaction with each other and with the children. Their classroom tasks have become more student directed, collaborative, and interactive. Participants are incorporating science activities into other learning situations, thereby fostering communication development. Children are asking more questions and communicating more with each other. Much has been accomplished since program implementation began in 1996, suggesting that expanding the Head Start on Science program could lead to even greater effectiveness of ensuring that children start school ready to learn.

IMPLICATIONS

Several policy and practical implications can be drawn from the work of the HSS program. First, Head Start programs must involve parents in their efforts to enhance the lives and learning of children and ensure that all children start school ready to learn. Parental behavioral expectations for their children have important long-term implications in children's "natural curiosity" to learn. Second, collaboratively involving teachers and parents in Head Start activities enhances children's capacity to learn in school and at home. Intervention programs designed to include parents and teachers have a strong and positive impact on promoting the readiness of children to learn. Third, program interventions evolve in stages of development, growth, and change. In order to promote the sustained readiness of all children to learn, support must be provided for collaboration among schools, parents, and the community as ideas for useful strategies are developed, implemented, and evaluated.

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RELATED PUBLICATIONS

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If you would like further information about Head Start on Science, please contact the LSS Information Services Coordinator at (800) 892-5550.

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